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ABSTRACT

Attribution theorists have argued that if an intrinsically motivated activity is extrinsically reinforced, the activity will be devalued and extinguished when the reward is removed. Hypothesizing that activities performed for their instrumental outcome are valued less than activities not so externally oriented, and that activities performed for their instrumental outcome are primarily concerned with satisfying Maslow-type lower needs, a questionnaire was developed to measure activities and their rated values. College students (N=41) completed the questionnaire and participated in an interview to determine the perceived utility (primary reason for engaging in the activity) and the level of need the activity satisfied. Statistical analyses showed that the majority of responses for instrumental activities served the more basic needs of the Maslow hierarchy, while the majority of responses for intrinsic motivations served the higher order needs, mostly self-actualization. The hypothesis that activities performed for their instrumental outcome would be devalued was not supported, although the means tended toward that direction. (WAS)

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A STUDY OF EXTRINSIC VS. INTRINSIC MOTIVATION IN COLLEGE STUDENTS

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Paper presented at the Annual Convention of the Southwestern Psychological Association, San Antonio, TX, April 21-23, 1983.

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A Study of Extrinsic vs. Intrinsic Motivation

in College Students

In 1968 DeCharms proposed that "when a man perceives his behavior as stemming from his own choice he will cherish that behavior and its results; when he perceives his behavior as stemming from the dictates of external forces, that behavior and its results....will be devalued" (p. 273). Similarly Kelley's (1971) discounting principle argued that one cannot accept the presence of more than one motive force for an activity at any one time. He and other attribution theorists have argued that if an activity that has been intrinsically motivated is extrinsically reinforced, the activity will be devalued and extinguished when the reward is removed.

These theoretical positions can lead to the following predictions:

--Michaelangelo and Picasso would have painted more--or maybe they would only have painted better--if they hadn't been rewarded for their performance.

--The astronauts would like their work better--and perform better if they were not paid for it.

--College professors who originally enjoyed their research are enjoying it less or are quitting it because they got tenure and cost of living raises.

These predictions appear not only absurd but also anti-labor and anti-capitalist, as well as in direct conflict with years of research on operant conditioning.

Deci (1971, 1975), Lepper and Greene (1978), Kruglanski (1975) and others report, however, that tangible rewards introduced with intrinsically motivated activities in the laboratory do lead to a decrease in the

appearance of that behavior, or what Lepper and Greene call the "hidden cost of reward". Relatively few studies (Feingold & Mahoney, 1975; Day, 1981) have reported contradictory results. Deci (1971) and others report that the negative effects of the rewards are absent when the rewards give information to the subject about their competence levels on the task. (This could imply that across-the-board raises will lead to devalued job activity). Karniol and Ross (1977) reported that the relevance/irrelevance of the rewards determined the effect of that reward. Thus, rewards that convey information about performance may be immune to the negative effect.

Some of the inconsistencies and difficulties of interpretation may lie in two areas: (1) The definition of reward as used operationally in "cost of reward" studies is very different from that used in studies of learning. Hidden cost studies have studied behavior which was already the "most probably occurring" behavior; hence it was impossible to increase the probability of its occurrence. In learning reward increases probability of occurrence. (2) Rewards offered in human learning laboratory research have been exclusively information-giving for reasons of economics and ethics; therefore, "information" is the only meaningful reward available, which, as has been discussed, is immune to the "hidden cost of reward"; hence the lack of support for motivation theory.

Since deCharms (1968) held that we can only know that motivation exists because we have perceived ourselves as causal agents, a questionnaire and follow-up interview were designed to probe those self-perceptions of intrinsic and extrinsic controls and rewards. We focused on the effects of rewards on activities which occur in non-laboratory settings, and measured the effect of those instrumental activities on how the individual values the behavior.

The survey instrument and interview tested the following hypotheses:

1. Activities performed for their instrumental outcome are valued less than activities not so externally oriented (The Hidden Cost of Reward).
2. Activities performed for their instrumental outcome are primarily concerned with satisfying lower needs according to a simplified Maslow hierarchy.

The questionnaire was developed to measure activities and their rated values; the interview was designed to determine the Perceived Utility and the level of need the activity satisfied. Perceived Utility was defined to the subject as "the primary reason you engage in this activity".

Methods

Activity survey. First, 32 General Psychology students listed the five activities in their lives which they most preferred. The resulting list contained 122 activities as well as OTHER followed with a blank for any additions.

Subsequently, 41 different General Psychology students were administered the Survey individually. Subjects were instructed to rate on a nine point scale, those activities they had engaged in within the past two years The anchor points were: -4, "The thing I hate doing most", +4, "My favorite thing to do".

Interview. Following completion of the Activity Survey the subjects were asked a series of questions to establish the following:

1. What Perceived Utility does this activity serve for the individual? Utility categories were Instrumental, Fun, Skill/Learning (for its own sake) and Self-expression. The Instrumental category reflects "external" motivation, the other three categories reflect "internal" motivation.

2. What is the level of need which this activity serves for the individual? The Maslow hierarchy was: (a) physical requirements; (b) belonging/love; (c) esteem; and (d) self-actualization.

Results

Hypothesis 1. Rated value of instrumental vs. intrinsic activities.

Two measures were used in comparing the results: (1) mean rating, a measure of how well the individual liked any activity within a Perceived Utility category; and (2) summed ratings, the sum of all within-category scores, reflecting both the number of activities within a category, and how well the activity was liked.

Mean rating. A 4 x 2 mixed design ANOVA on mean rating for Perceived Utility and Sex of Subject indicated the only significant effect was of Perceived Utility ($F = 11.44$, $p < .01$). See Figure 1. Tukey HSD indicated that the Self-Expression rating is significantly different from all other conditions. The effect may be spurious, however, due to the large number of "no entries" in the category. The important comparison to note is that the mean rating, how well the individual liked the activity, was not significantly lower for Instrumental Activities than for Fun, Skill/Learning, and Self-expression activities, the "intrinsically" motivated activities.

Summed rating. A second 4 x 2 mixed ANOV was calculated on summed rating. Perceived Utility ($F = 283.8$) and the interaction of Utility with Sex were both significant. See Figure 2. Tukey HSD indicated that all Perceived Utilities differ from each other. The significant interaction was due to the differential effect of Sex of Subject on the Fun category. The females did significantly more Fun activities than did males.

Of total number of responses, 86% for the females and 87% for the males were either Fun or Instrumental. See Figure 3. There was, however a

difference in the breakdown of that percent. For males 44% were Fun, 43% were Instrumental; for females 48% were Fun, 38% were Instrumental. Percent of responses for Skill was 11 vs. 10%, 2 vs. 2.5% for Self-expression. The number of responses was not dependent on Extrinsic vs. Intrinsic sources of motivations but rather on the specific utility.

Hypothesis 2: Need level of Instrumental vs. Intrinsic Activities.

The pattern of needs as classified by the simplified Maslow hierarchy was very different for the Instrumental and for the three intrinsic categories of Fun, Skill and Self-expression (See Figure 4a through d). The majority of responses for Instrumental activities served the more basic needs; the majority of the responses for the intrinsic motivations served the higher order needs, mostly self-actualization.

Discussion

The hypothesis that activities performed for their instrumental outcome would be devalued was not supported, although the means did tend to be in that direction. The college students in the present sample perceived the majority of their activities to be either Fun or Instrumental; few activities as Skill or Self-expression. The Perceived Utility did not affect how much the subject valued the activities, but rather it seemed to affect how many activities were pursued in a specific utility, independent of the external-internal dichotomy.

The greatest effect of Utility category was found between the Fun and Instrumental, not by how highly they were valued, but very differently in the level of need served.

The diversity of responses was rather startling at times; for example, one student classified taking an essay exam as +2 Fun (not Instrumental) and

said it was to satisfy esteem. The only Self-Expression one male scored was Driving his car: +4. How a specific activity is valued and what need it serves is very idiosyncratic, but the categories of activities, how many activities within a category will be pursued, and the level of needs served are significant.

We would expect that the patterns of Perceived Utilities would change for the individual at different periods of life. Only further research with different ages can test this prediction. However, the present study leads us to believe that the ratings or value of the activity will not change according to external rewards alone. The Utility of the activity is more important than the source of rewards.

In summary, Instrumental/Extrinsic oriented behavior is rated just as highly as is Fun, the other most frequently chosen activity for the sample of college students at The University of Tulsa. The Perceived Utilities of Skill/Learning for its own sake and Self-Expression occur much less frequently in the reported sample, although they probably are valued equally.

Back to Michaelangelo, Picasso, the astronauts, and college professors: we"re relieved that our results don't lead us to recommend that people shouldn't be paid except when it informs them as to how well they are doing.

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Table 1

Summary of Tukey Procedure

		Mean Ratings			
Males		Fun	Skill	Instrumental	Self Expression
	Mean	2.30	2.09	2.06	1.33
Fun	2.30		.21	.24	.97*
Skill	2.09			.03	.76*
Instrumental	2.06				.73*
Self Expression	1.33				
Females					
	Mean	2.56	2.46	2.32	1.72
Fun	2.56		.10	.24	.84*
Skill	2.46			.14	.74*
Instrumental	2.32				.60*
Self Expression	1.72				

* Significant HSD = .44256

Tukey's Honestly Significant Difference Test on the Mean Rating for each Perceived Utility category.

Table 2

Summary of Tukey Procedure

Summed Ratings

		Fun F	Fun M	Instr. F	Inst. M	Skill F	Skill M	S.E. F	S.E. M
	Mean	83	65	59	55	18	18	6	4
Fun F	83		18*	24*	28*	65*	65*	77*	79*
M	65			6	10	47*	47*	59*	61*
Instrumental F	59				4	41*	41*	53*	55*
M	55					37*	37*	49*	51*
Skill F	18						0	12*	14*
M	18							12*	14*
Self Expr F	6								2
M	4								

* Significant, HSD = 11.59

Tukey's honestly significant difference test on the sum of Ratings with a Harmonic Mean. Pinpoints the interaction between males and females for each Perceived Utility category.

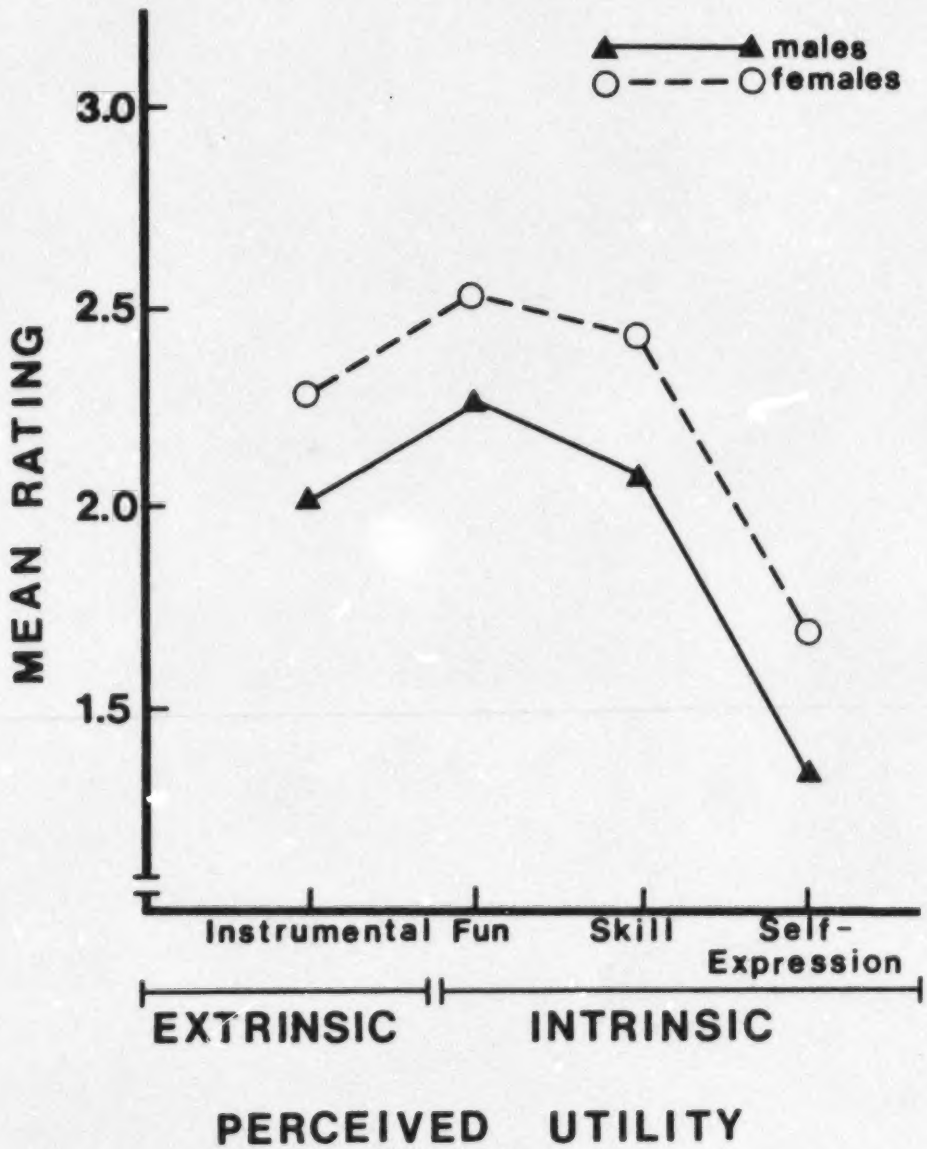

FIGURE 1. MEAN RATING FOR EACH OF THE FOUR PERCEIVED UTILITY CATEGORIES FOR BOTH MALES AND FEMALES.

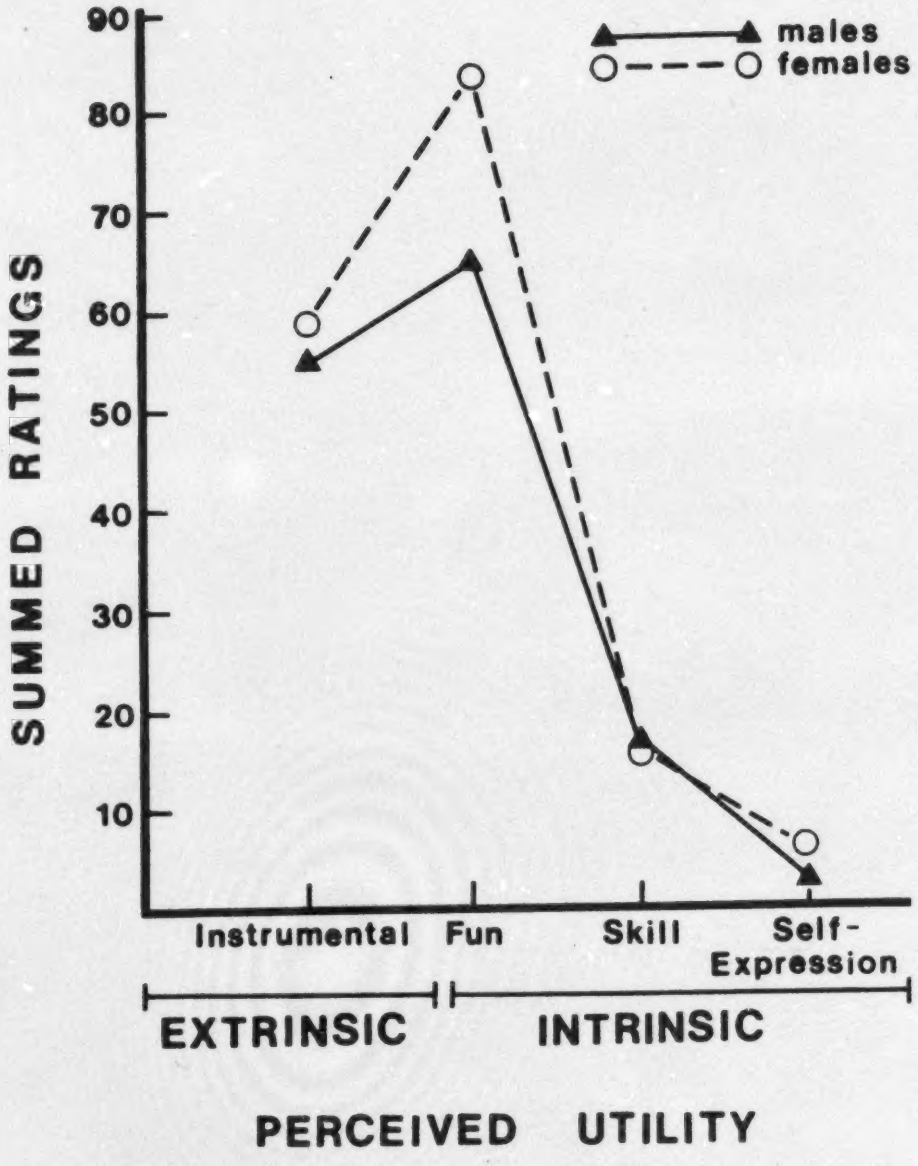

FIGURE 2. SUM OF ALL WITHIN CATEGORY RATINGS (SUMMED RATINGS) FOR INTRINSICALLY AND EXTRINSICALLY MOTIVATED BEHAVIOR FOR BOTH MALES AND FEMALES.

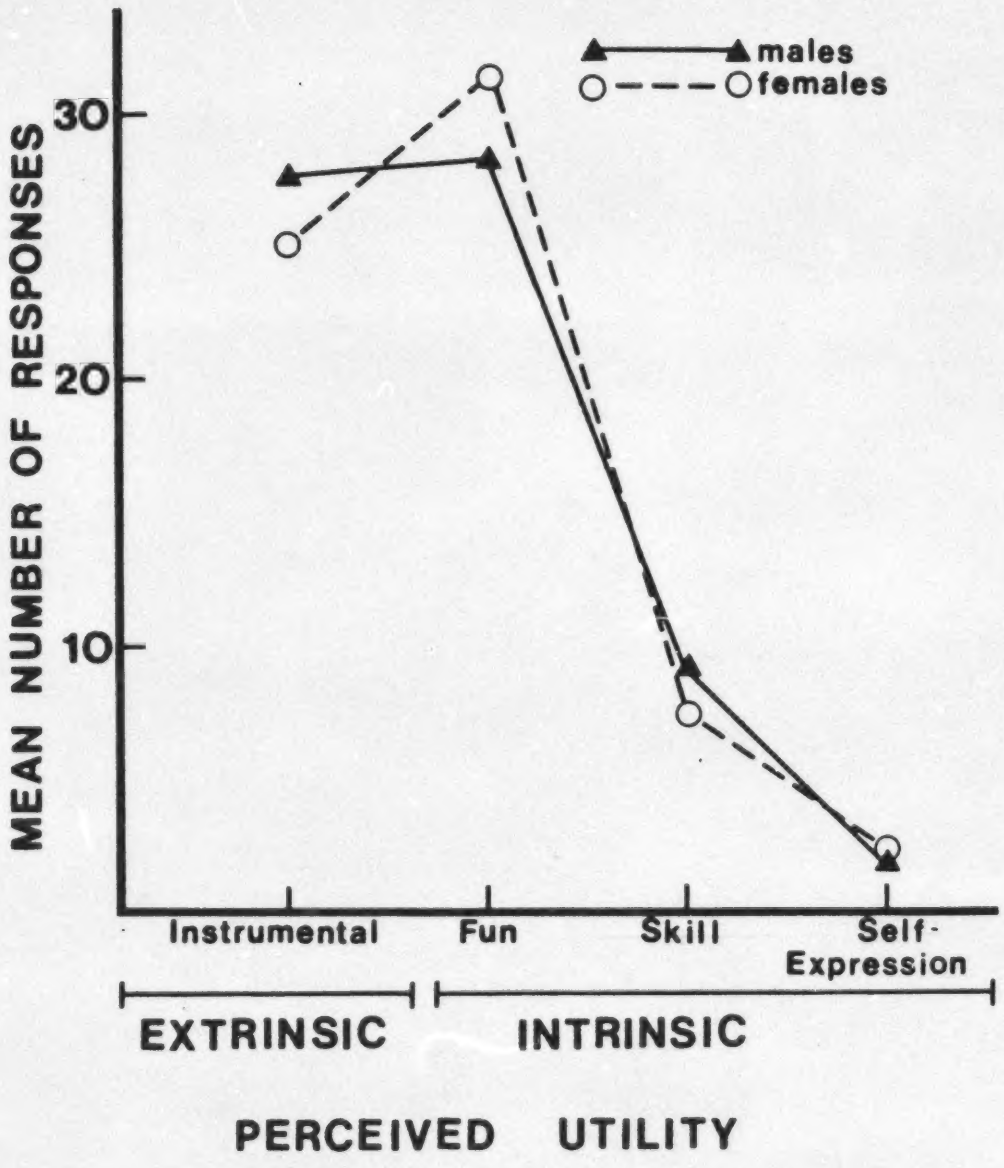

FIGURE 3. MEAN NUMBER OF RESPONSES PER SUBJECT IN EACH PERCEIVED UTILITY CATEGORY FOR BOTH MALES AND FEMALES.

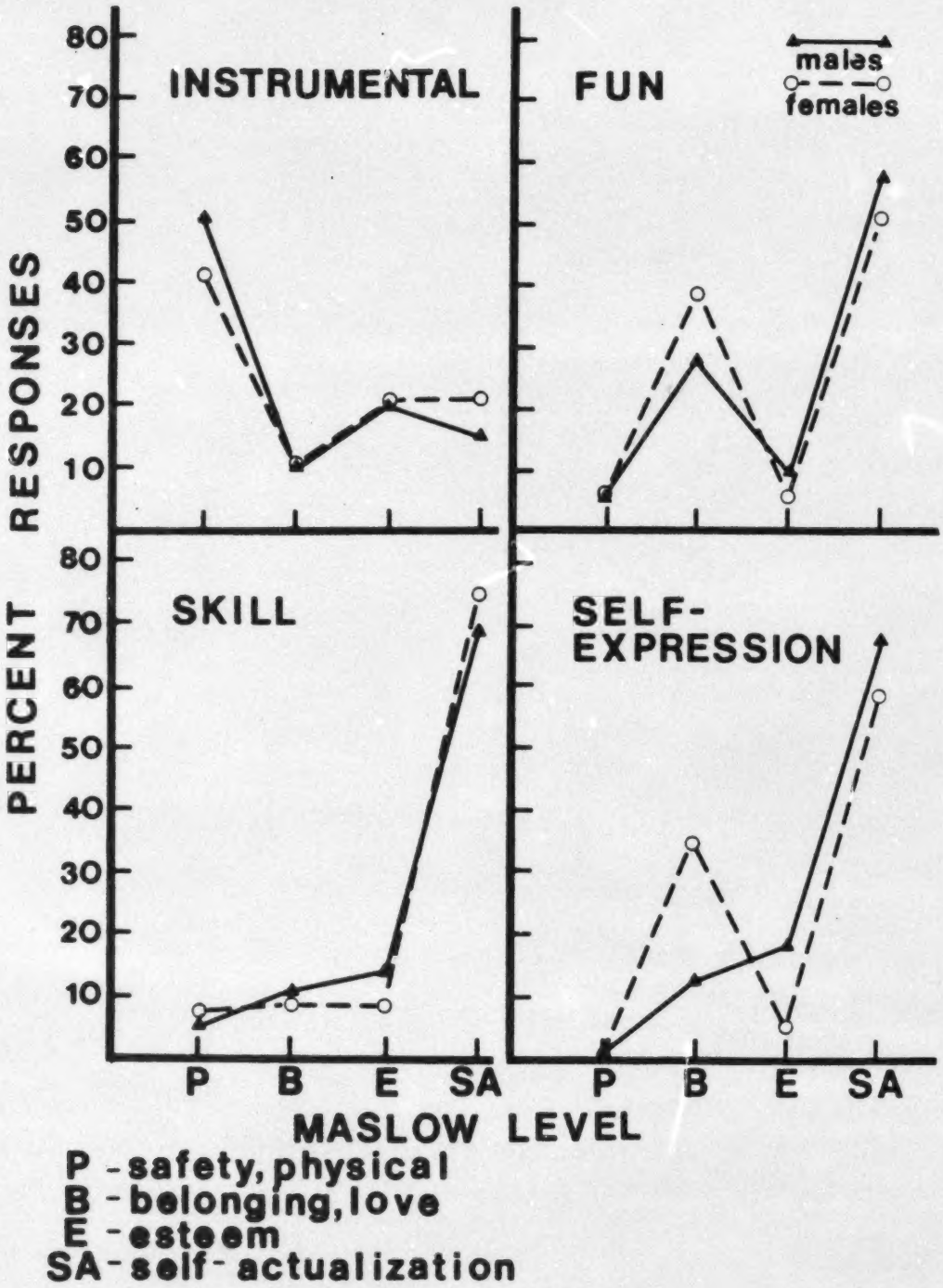

FIGURE 4. DISTRIBUTION OF RESPONSES BY PERCENTAGE INTO MASLOW LEVEL FOR EACH PERCEIVED UTILITY CATEGORY FOR BOTH MALES AND FEMALES.